

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

REVISED MONITORING AND REPORTING PROGRAM NO. R5-2008-0149-004

FOR
LLOYD O. AND ELSIE V.M. GOTTHOLD SUPPORT TRUST B, PARATRANSIT INC.
FAVERO PROPERTY
1931 30TH STREET, SACRAMENTO
IN-SITU REMEDIATION OF PETROLEUM HYDROCARBONS
SACRAMENTO COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring a groundwater extraction and treatment system. This MRP is issued pursuant to Water Code Section 13267. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer. As appropriate, Regional Board staff shall approve specific sample station locations prior to implementation of sampling activities.

The following revisions have been made to the MRP previously issued on 10 November 2009:

- The reporting frequency has been reduced to semi-annually.
- The footnote 3 of Table 2, identifying metals analysis has been deleted as this sampling requirement is not relevant for this Order.
- The section requiring amendment analysis has been deleted as this task has been completed.
- Background concentrations have been established for chemicals of concern, and the background concentration section has been updated to reflect this.

GROUNDWATER MONITORING

1. As shown on Figure 1, there are 21 monitor wells, 5 extraction wells, and 14 injection wells associated with this site, not all of which will be monitored under this program. The groundwater monitoring program for these wells and any treatment system wells installed subsequent to the issuance of this MRP shall follow the schedule below. Monitoring wells with free phase petroleum product or visible sheen shall be monitored, at a minimum, for product thickness and depth to water, and this information shall be provided in semi-annual monitoring reports. The volume of extracted groundwater shall also be provided in semi-annual monitoring reports. Sample collection and analysis shall follow standard EPA protocol.
2. All samples should be representative of the volume and nature of the discharge or matrix of material sampled. The time, date, and location of each grab sample shall be recorded on the sample chain of custody form.
3. The monitoring wells and extraction wells shall be sampled according to the schedule in Table 1 and the samples analyzed by the methods in Table 2, as follows:

Table 1: Sampling Frequency and Constituent Suite

Well Number ¹	Frequency ²	Constituent Suite(s) ³	Monitoring Objective
GT-8, GT-9, WC-3	Quarterly	Suites B and C	Compliance ⁴
DW-1 through DW-8 ⁷	Quarterly	Suites A and B	Treatment Zone ⁵
MW-1, MW-2, MW-3, MW-5, MW-14	Quarterly	Suite B	Transition Zone
GT-2, GT-4, GT-5, MW-9 WCC, MW-10 WCC	Annually	Suite C and D	Background ⁶

¹ Well numbers as shown on Figure 1.

² Prior to startup and stated frequency thereafter.

³ Constituent suite components listed in Table 2.

⁴ Wells used to determine compliance with groundwater limitations.

⁵ Wells sampled to evaluate in-situ bioremediation progress inside the treatment zone.

⁶ Wells used to develop background concentrations.

⁷ Only sampling of wells being used as active extraction wells during the quarter is required as not all of these wells will be used at the same time.

Table 2: Analytical Methods

Constituent	Method ¹	Maximum Practical Quantitation Limit (µg/L) ²
Suite A		
Benzene, toluene, total xylenes, ethylbenzene	EPA Method 8260B	0.5
Total Petroleum Hydrocarbons as gasoline	EPA Method 8015M	50
Suite B		
Nitrate	EPA Method 6500	300
Sulfate	EPA Method 300.0	2,000
Ammonia	EPA Method 350.1	100
Nitrite	EPA Method 6500	300
Phosphorous, orthophosphate	EPA Method 365	1,000
Potassium	EPA Method 200.7	100
Iron, Total and Dissolved	EPA Method 200.7	100
Manganese, Total and Dissolved	EPA Method 200.7	25
Suite C		
Total Dissolved Solids	EPA 160.1	10,000
Suite D		
Iron, Total and Dissolved	EPA Method 200.7	100
Manganese, Total and Dissolved	EPA Method 200.7	50
Nitrate	EPA Method 6500	300

¹ Or an equivalent EPA Method that achieves the maximum Practical Quantitation Limit.

² All concentrations between the Method Detection Limit and the Practical Quantitation Limit shall be reported as an estimated value.

FIELD SAMPLING

4. In addition to the above sampling and analysis, field sampling and analysis shall be conducted each time a monitor well or extraction well is sampled. The sampling and analysis of field parameters shall be as specified in Table 3.

Table 3: Field Sampling Requirements

Parameters	Units	Type of Sample
Groundwater Elevation	Feet, Mean Sea Level	Measurement
Oxidation-Reduction Potential	millivolts	Grab
Electrical Conductivity	uhmos/cm	Grab
Dissolved Oxygen	mg/L	Grab
pH	pH units (to 0.1 units)	Grab

5. Field test instruments (such as those used to test pH and dissolved oxygen) may be used provided that:
- (a) The operator is trained in proper use and maintenance of the instruments;
 - (b) The instruments are calibrated prior to each monitoring event;
 - (c) Instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and
 - (d) Field calibration reports are submitted as described in item (b) of the "Reporting" section of this MRP.

DISCHARGE MONITORING

6. The Discharger shall monitor daily the discharge of water and amendments that are injected into the groundwater according to the requirements specified in Table 4. Each amendment addition shall be recorded individually, along with information regarding the time period over which the amendment was injected into the aquifer.

Table 4: Discharge Monitoring Requirements

Parameters	Units	Type of Sample
Injected Volume	gallons per day	Meter
Amendment(s) Added	kilograms per day	Measured
Biocide Added	kilograms per day	Measured

ESTABLISHMENT OF BACKGROUND CONCENTRATION VALUES

7. The Discharger established the following background values for concentrations in groundwater:

Table 5: Background Concentration Values

Constituent	Background Concentration (mg/l)
Nitrate	7.57
Dissolved Iron	11.53
Dissolved Manganese	5.51
Total Dissolved Solids	673

mg/l = milligrams per liter

REPORTING

8. When reporting the data, the Discharger shall arrange the information in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized in such a manner as to illustrate clearly the compliance with this Order. In addition, the Discharger shall notify the Regional Board within 48 hours of any unscheduled shutdown of any soil vapor and/or groundwater extraction system. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall also be reported to the Regional Board.
9. As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, all reports shall be prepared by a registered professional or their subordinate and signed by the registered professional.
10. The Discharger shall submit semi-annual electronic data reports, which conform to the requirements of the California Code of Regulations, Title 23, Division 3, Chapter 30. The semi-annual reports shall be submitted electronically over the internet to the Geotracker database system by the 1st day of the second month following the end of each calendar half of the year by **1 February and 1 August** until such time as the Executive Officer determines that the reports are no longer necessary.
11. Hard copies of semi-annual reports shall be submitted to the Regional Board by the **1st day of the second month following the end of each calendar half of the year (i.e., by 1 February and 1 August)**. Each semi-annual report shall include the following minimum information:
 - (a) a description and discussion of the groundwater sampling event and results, including trends in the concentrations of pollutants and groundwater elevations in the wells, how and when samples were collected, and whether the pollutant plume(s) is delineated;
 - (b) field logs that contain, at a minimum, water quality parameters measured before, during, and after purging, method of purging, depth of water, volume of water purged, etc.;

- (c) groundwater contour maps for all groundwater zones, if applicable;
 - (d) pollutant concentration maps for all groundwater zones, if applicable;
 - (e) a table showing well construction details such as well number, groundwater zone being monitored, coordinates (longitude and latitude), ground surface elevation, reference elevation, elevation of screen, elevation of bentonite, elevation of filter pack, and elevation of well bottom;
 - (f) a table showing historical lateral and vertical (if applicable) flow directions and gradients;
 - (g) cumulative data tables containing the water quality analytical results and depth to groundwater;
 - (h) a copy of the laboratory analytical data report, which may be submitted in an electronic format;
 - (i) the status of any ongoing remediation, including an estimate of the cumulative mass of pollutant removed from the subsurface, system operating time, the effectiveness of the remediation system, and any field notes pertaining to the operation and maintenance of the system; and
 - (j) if applicable, the reasons for and duration of all interruptions in the operation of any remediation system, and actions planned or taken to correct and prevent interruptions.
12. An Annual Report shall be submitted to the Regional Board by **1 February** of each year. This report shall contain an evaluation of the effectiveness and progress of the investigation and remediation, and may be substituted for the **second semi-annual** monitoring report. The Annual Report shall contain the following minimum information:
- (a) both tabular and graphical summaries of all data obtained during the year;
 - (b) groundwater contour maps and pollutant concentration maps containing all data obtained during the previous year;
 - (c) a discussion of the long-term trends in the concentrations of the pollutants in the groundwater monitoring wells;
 - (d) an analysis of whether the pollutant plume is being effectively treated;
 - (e) a description of all remedial activities conducted during the year, an analysis of their effectiveness in removing the pollutants, and plans to improve remediation system effectiveness;
 - (f) an identification of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program; and
 - (g) if desired, a proposal and rationale for any revisions to the groundwater sampling plan frequency and/or list of analytes.

13. A letter transmitting the monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain the penalty of perjury statement by the Discharger, or the Discharger's authorized agent, as described in the Standard Provisions General Reporting Requirements Section B.3.

The Discharger shall implement the above monitoring program on the first day of the month following adoption of this Order.

Ordered by: original signed by
PAMELA C. CREEDON Executive Officer

17 April 2012
(Date)